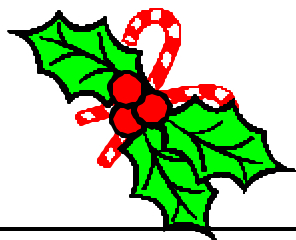


THE NORTHLAND SKY WATCHER



*For National Weather Service weather watchers of
northeastern Minnesota and northwestern Wisconsin*

After 130 Years We Are Still Going Strong!

On Wednesday, October 18th, the National Weather Service celebrated 130 years in Duluth. Our history began on the second floor of the Edmunds Building, which was later renamed the Miller Block. Located on the southeast corner of Lake Avenue and Superior Street, it was in the heart of a growing downtown. The Duluth weather office was one of the first 24 weather observing stations created in 1870. At that time, the population of Duluth was only about 1200! The beginning of the National Weather Service we know today started on February 9th, 1870, when President Ulysses S. Grant signed a joint resolution of Congress authorizing the



On January 1, 1904, the Weather Bureau office moved into a building of its own, located just above Skyline Drive at 7th Avenue West and 8th Street where employees had a spectacular view of the harbor. The official-in-charge lived in an apartment on the second floor. The building is now a private residence. This photo was taken November 24, 1913.

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Secretary of War to establish a national weather service. This resolution required the Secretary of War: "to provide for taking meteorological observations at the military stations in the interior of the continent and at other points in the States and Territories...and for giving notice on the northern (Great) Lakes and on the seacoast by magnetic telegraph and marine signals, of the approach and force of storms."

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After much thought and consideration, it was decided that this agency would be placed under the Secretary of War because military discipline would probably secure the greatest promptness, regularity, and accuracy in the required weather observations. Within the War Department, it was assigned to the Signal Corps under Brigadier General Albert J. Myer.



Here Official-In-Charge of the U.S. Weather Bureau H. W. Richardson takes readings using some early weather instruments. Mr. Richardson was head of the office from 1898-1913.

General Myer gave the National Weather Service its first name: The Division of Telegrams and Reports for the Benefit of Commerce.

The first weather observer at the Duluth office was Norman B. Conger, a sergeant in the U.S. Army Signal Corps. Weather observing and forecasting have come a long way since Sgt. Conger first took weather observations from that small, coal-heated room. Over the past 130 years, simple visual observations have been replaced by state-of-the-art Doppler radars, satellites, and high-resolution computer models that meteorologists use to issue today's forecasts. While the NWS uses many state-of-the-art technologies, meteorologists still rely heavily on some traditional sources for important weather data, including radiosondes carried by weather balloons and manual river observations. We also rely on our

thousands of observers, who report everything from tornadoes to snowfall. These observers are truly the heart of the National Weather Service.

Although our office has advanced a great deal technologically, the mission of the National Weather Service has changed very little in 130 years. Ever since our doors opened on October 18th, 1870, the main mission of the National Weather Service in Duluth has been to protect life and property. Whether it's a tornado warning, a blizzard warning, or a forecast for the upcoming weekend, we're here 24 hours a day to watch over the Northland's weather. Another important focus for our office is to improve what we do. We will never forget our roots, and we will continue to strive to provide the best weather services possible to the Northland.

- Dean Packingham, forecaster

**Winter officially begins
December 21
at 7:37 am**



The Northland's Snow-Makers

Snowfall for a particular winter season depends upon where the average storm track is during the winter. In the winter of 1995-96, one storm track began in Colorado and continued northward through central Wisconsin and central Lake Superior. During that winter, a number of other storms from Alberta passed through South Dakota and continued eastward through the Minneapolis area. Snowfall at Duluth totaled 135.4 inches, an all-time record. However, in the winter of 1881-82, the storm track was not near Duluth, and only 20.8 inches of snow fell the entire season.

Most snowfall events in the Northland amount to less than six inches. Rarely, a severe snowstorm will dump over two feet on the area. Significant snowstorms tend to occur during the fall or the spring, when nearby areas are warm and humid, and moisture has less distance to travel before reaching the Duluth area. Most moisture for snowfall comes from the Gulf of Mexico, and can take a number of days to arrive.

Types of Snowstorms in the Northland

Alberta Clipper

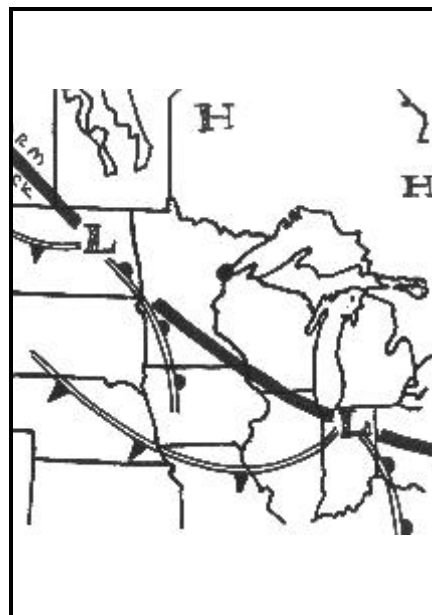
This type of storm forms in the Rocky Mountains of northwestern Alberta, Canada. This type of low moves rapidly southeastward, over the eastern Dakotas and Minnesota. Alberta Clippers that track just south of Fargo, ND and through Rochester, MN will often leave three to five inches of dry, powdery snow over the Northland. Alberta clippers usually occur during cold spells. Often, another surge of cold air follows the clipper.

Colorado Low

Sometimes the high mountains west of Denver split the jet stream. At the same time, large amounts of moisture flow northward into western Kansas and eastern Colorado. As a result, storms form and rapidly intensify as they track toward central Lake Superior and James Bay. Very strong winds and heavy precipitation are typical. The "Gales of November" over Lake Superior, as well as the blizzards of the Dakotas are usually a result of this type of storm.



Typical track of a Colorado-type low.



Typical track of an Alberta clipper-type low.

We can expect heavy snow accompanied by strong winds with storms that track through central Iowa, southeastern Minnesota, then cross the Keweenaw Peninsula of Michigan. A powerful storm in late November, 1905, was a Colorado low. This storm sank or disabled 18 ships in western Lake Superior, and was accompanied by blizzard conditions and 70 mph winds at Duluth. The Edmund Fitzgerald Storm of early November, 1975, was also the result of a Colorado low.

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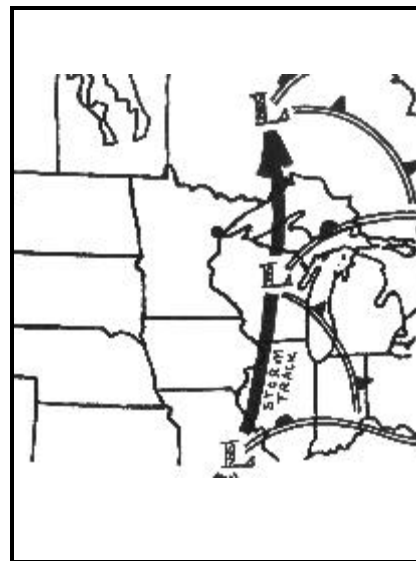
Texas Hook

This type of storm forms in the Texas Panhandle, sinks southeastward toward the Gulf Coast, then hooks straight northward, close to the Mississippi River. Such storms contain large amounts of tropical moisture from the Gulf of Mexico, and are notorious for bringing heavy rain and floods to some areas east of the Mississippi.

Rarely, such a storm will track northward through central Wisconsin and move toward Thunder Bay, Ontario. When this happens, we may receive a very heavy fall of dense, wet snow. During October 31 through November 3, 1991, such a storm dumped 36.9 inches, or over three feet of snow, on Duluth. At the same time, another, even more powerful storm on the East Coast, became the topic of the book and the movie *The Perfect Storm*.

Lake Effect Snow

Lake effect snowstorms are small but powerful convective storms that form over the Great Lakes and move several miles inland, sometimes dumping several feet of snow in a day or two. These storms form when very cold arctic air rushes south or southeastward over the open water of the Great Lakes. Such storms are rare along Lake Superior's north shore, but are quite frequent along the south shore. In the 1996-97 season, 277.7 inches of snow fell in Hurley, WI, setting a new state snowfall record. Most of Hurley's snow that season was due to lake effect.



Typical track of a Texas hook-type low.

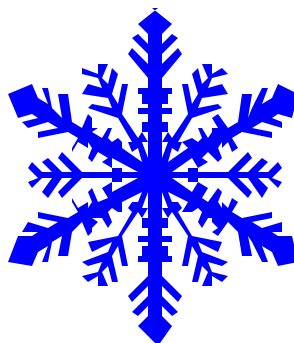
- Article and graphics by Peter Parke, forecaster

Snow Spotters

An important part of forecasting is the need for weather spotters of all types. The need to report conditions occurring at spotter locations is vital in issuing the proper products for the rest of their neighbors- state or region. Some of these individuals are called Snow Spotters. They report snowfall and depth over a wide variety of times and dates. Snow spotters report 24- hour snowfall as well as updated snowfall amounts during heavy snow events. They also report current snow depth which is extremely helpful during the spring snow melt. Currently, the National Weather Service Office in Duluth has sixty snow spotters in northeastern Minnesota and northwestern Wisconsin.

We can always use more spotters, so if you know of anyone in your area that is interested in becoming a spotter let us know.

-Steve Wannebo, snowfall network manager



**Come see us at the
Duluth Boat, Sport,
and Travel Show!**

**Sign up to win a NOAA
Weather Radio and
other neat prizes!**



This is what makes a ham event so special. Skywarn ham Dick Bodine lets Anna-Marie Christenson, 10, talk to a ham in California. Anna is anxious to get her license.

Local Skywarn Hams Participate in National Special Event

Members of the Duluth National Weather Service's local Skywarn Amateur Radio Responders joined



Skywarn ham responders Cletus and Karen Makowski and Doug Nelson work the ham station during the Special Event.

hundreds of other amateur radio operators, or hams, in a national Special Event. The special event, co-sponsored by the National Weather Service and the Amateur Radio Relay League, was first started last year to commemorate the contributions the hams make during times of threatening weather and to test the backup communications as the Y2K changeover approached. The event was such a success that it was run again this year.

During the event, which ran from 6:00 pm December 1 through 6:00 pm December 2, hams from the local Skywarn

group attempted to communicate with other hams at NWS Offices across the country by using only their radio equipment and frequencies. The local hams set up shop at the Duluth NWS office, a place they frequent during times of severe weather. Eleven hams staffed the station during the event. They made 345 contacts, including: 29 to other NWS offices, 40 different states, 1 U.S. territory (Puerto Rico), 6 Canadian provinces, and 3 foreign countries (Portugal, Costa Rica, and Japan).

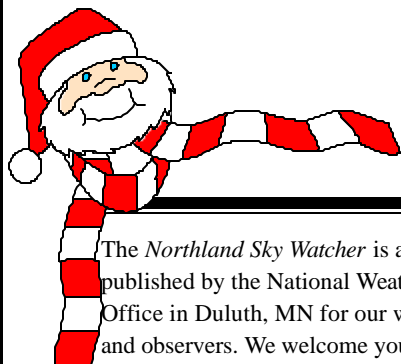
This Special Event let National Weather Service staff reinforce the important relationships developed with the amateur radio community. According to Doug Nelson, ham coordinator for the event, "The

interaction with the NWS staff was great. We built up more rapport in this one event than during all the times we've been up for Skywarn activation."

Weather Service staff were wowed by the hams' communications ability. A few tried their hand at the ham controls. Mike Stewart, Meteorologist-in-Charge, spoke to a ham in Caribou, ME. Mike said of the experience, "It was really exciting. It was a unique opportunity to take part in the event."

Although this event was not a contest, certificates will be awarded to hams who meet certain goals for making contacts. The local hams will receive the Fire Weather, Monsoon, and Tornado certificates.

*- Carol Christenson, Warning Coordination
Meteorologist*



The *Northland Sky Watcher* is a newsletter published by the National Weather Service Office in Duluth, MN for our weather spotters and observers. We welcome your questions and comments. We can be reached by:

Phone: (218) 729-6697
(218) 283-4615 dialing from
International Falls

mail: 5027 Miller Trunk Hwy
Duluth, MN 55811

or e-mail to carol.christenson@noaa.gov

Visit our homepage on the internet at
www.crh.noaa.gov/dlh/duluth.htm

**Happy Holidays from the
National Weather Service!
Thanks for a great year.**

